

Information Seeking Anxiety: Concept, Measurement and Preliminary Research

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Abstract

This study aims to introduce the information seeking anxiety construct as a phenomenon among postgraduate students. It also presents the Information Seeking Anxiety Scale (ISAS) as a valid and reliable instrument. Further, the current study investigates the prevalence of information seeking anxiety among postgraduate students at a research-intensive university in Kuala Lumpur, Malaysia. Results of the study revealed that while information seeking anxiety is present among the studied students, the overall level is not high. Additionally, Different levels (low, mild, moderate and severe levels) of the information seeking anxiety construct were reported to have experienced by 96.5% of the postgraduate students at the sampled university.

Keywords: information seeking anxiety, academic-related anxiety, information seeking process, postgraduate students

Introduction

Anxiety is the pervasive and unpleasant feeling of tension, frustration and unease. It is a term for a variety of responses to nonspecific perceptions of danger or threat. This feeling has been identified as one of the most important barriers in academic environments, which has caused different cognitive, affective, and behavioral effects in students, and affected their educational performance (Erfanmanesh, 2011). Scientific and educational environments may give students the experience of frustration and anxiety called “academic-related anxiety” (Onwuegbuzie, Jiao, & Bostick, 2004). Different types of academic-related anxiety that have been identified to have negative effects on student’s performance include library anxiety (Bostick, 1992; Jiao & Onwuegbuzie, 1997; Mellon, 1986; Onwuegbuzie et al., 2004; Van

Kmapen, 2003), research anxiety (Kracker, 2002; Onwuegbuzie, 1997), computer anxiety (Jerabek, Meyer,&Cordinak, 2001; Kohrman, 2002; Turkzadeh& Angulo, 1992), Internet anxiety (Ben Omran, 2001), mathematics and statistics anxiety (Onwuegbuzie& Wilson, 2003), foreign language anxiety (Bailey, Onwuegbuzie,& Daley, 1998), writing anxiety (Onwuegbuzie, 1997), and test anxiety (Hill &Wigfield, 1984). However, of all the forms of academic-related anxiety, frustration associated with the search for information resources in libraries or information systems appear to be among the most prevalent, because virtually most, if not all, students are required to conduct a research (research project, thesis, or dissertation) as part of completing their academic program which needs an extensive search and use of information resources (Kuhlthau, 1993; Onwuegbuzie& Jiao, 2004; Onwuegbuzie, et al., 2004). Fear and apprehension during the information search process (which has been labeled information seeking anxiety in the current study) may has debilitating effects on students' academic achievement (Jiao, Onwuegbuzie,&Waytowich, 2008) and their research performance (Onwuegbuzie& Jiao, 2004). As such, the aim of the current study is to deepen further understanding of this problem by developing an instrument to measure levels of information seeking anxiety and validating this scale in a Malaysian research intensive university. It is hoped that the results of the present study can make an important contribution to the literature of academic-related anxiety in general and the information seeking anxiety in particular.

The Concept of Information Seeking Anxiety

The intricacy of higher education research, especially postgraduate research, requires the identification and retrieval of information resources through different sources. Finding a topic for research, writing a research proposal, conducting a review of the related literature, and settling on the research topic may cause or increase feelings of anxiety and frustration in the vast majority of postgraduate students (Kohrman, 2002; Van Kampen, 2003). Information seeking anxiety (anxiety concerning the information seeking process) is typically experienced when an individual is searching for information in libraries or information systems or even when he is preparing or just thinking to conduct search process. Student's anxiety during the information seeking process is well documented in the literature (Kuhlthau, 1993; Mellon, 1986; Onwuegbuzie et al., 2004; Van Kampen, 2003). According to Mellon (1986), "when confronted with the need to gather information in the library ... many students become so anxious that they are unable to approach the problem logically or effectively" (Mellon, 1986 as cited in Van Kampen, 2003, p. 28). Kuhlthau (1993) stated that anxiety is a natural feeling during the information seeking process which may begin in any one of the six stages of the research process (i.e., task initiation, topic selection, prefocus exploration, focus formulation, information collection and search closure). She found that feelings of anxiety and frustration were at their highest at the beginning of the search process when students suffered from

confusion and lack of certainty. Students noted at the task initiation stage that they became upset, suffered anxiety, and experienced fear. Once they had selected their topics, those feelings dissipated and the students experienced greater confidence and a better sense of their courses of action. Students again became confused when searching for information on their topics. Once students reached the fourth stage of specific topic focus, their confidence returned and they regained their sense of direction. Kuhlthau (1993) also found that anxiety increased when the user was unfamiliar with the sources and technologies utilized in the search process. Ultimately, the users' entire experiences, including their emotions and intellects, influenced their information seeking behaviors and the levels of anxiety encountered during the information search process.

Dalrymple and Zweizig (1992) found that some of the negative feelings like frustration, anxiety, tension, and confusion were reported by participants during the information seeking process using card and Online Public Access Catalogue catalogs. Branch (2001) revealed that uncertainty, frustration, doubt, and anxiety to be the common emotions while searching for information resources using the CD-ROM encyclopedias among junior high school students. She also found that factors like finding appropriate keywords, knowing when to narrow or broaden the search term, asking questions of others and having time, patience, and persistence when searching for information resources may influence emotions of students during the information seeking process. Bilal (2005) revealed that forty-three percent of the studied students felt anxious and frustrated during the information seeking process. The students reported that their anxiety arose when they could not find relevant information. Feeling of anxiety during the information seeking process was also reported because of slow download of websites, screen freezing, and confusing screen display.

Despite the prevalence of anxiety among students during the information seeking process (Kuhlthau, 1993; Mellon, 1986; Onwuegbuzie et al., 2004; Van Kampen, 2003) and the fact that this anxiety has been found to negatively affect students' academic achievement and research performance (Onwuegbuzie et al., 2004), prior to the present study, no researcher has examined empirically this phenomenon. Furthermore, no scale has ever been developed, let alone validated, to assess the anxiety that experienced by students during the information seeking process of their research. It is important to note that the term information seeking anxiety was introduced by Erfanmanesh (2012) for the first time. Many previous studies which investigated the anxiety experienced during the information seeking part of research did not name this phenomenon or even did not provide any definition of it. Rather, they have included information seeking as a part of a general library research and have used library anxiety scales to investigate information seeking anxiety of users (Kohrman, 2002; Onwuegbuzie, 1997; Van Kampen, 2003). The current study aims to further our understanding of the postgraduate students' anxiety when they are searching for information resources related to their research. Additionally, the procedures followed for development and

validation of the Information Seeking Anxiety Scale (ISAS) are explained. Finally, it attempts to determine the prevalence of the information seeking anxiety among postgraduate students at a research-intensive university in Kuala Lumpur, Malaysia.

Development and Validation of the Information Seeking Anxiety Scale (ISAS)

An extensive review of the literature on feelings and emotions during the information seeking process was conducted. It was found that hitherto no scale was developed, let alone validated, to assess the anxiety that was experienced by students during the information seeking process in libraries or information systems. Subsequently, development and validation of the Information Seeking Anxiety Scale (ISAS) was one of the purposes of the study. The research to develop the Information Seeking Anxiety Scale (ISAS) took place in several empirical phases. In the first step, a list of ninety-four potential key components was gleaned from several sources include: a) extensive review of the literature in the areas of library anxiety, computer anxiety, Internet anxiety, information anxiety, information seeking process, and other related areas; b) existing instruments in aforementioned constructs; c) interviews with ten postgraduate students to identify what made them anxious when they were seeking information related to their research in libraries or information systems and d) consultation with the Library and Information Science (LIS) faculty members at the university. As a result, a pool of ninety-four key components was formulated by the researcher.

The initial list of key components was sent to a panel of experts for validation. Based on the responses received from ten experts, twenty-nine components were eliminated from the list, and five new components were added, leaving seventy components. In the next step of the instrument development, a list of one hundred and fifty-four statements was created based on the list of seventy key components. The list of statements was submitted again to the same panel of experts for validation. Responses were received from eight experts out of fourteen which incorporated several changes and modifications. Following revisions to the list of statements, a pilot instrument was developed in order to determine its potential validity. The pilot instrument consisted of ninety-three statements, scored on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The statements were both in positive and negative forms and had at least one statement addressing each key component that was identified before. Additionally, a demographic information form was developed to collect the required demographic information for this study. Two pilot studies were conducted during January to March 2011 at a research-intensive university in Kuala Lumpur, Malaysia. A total of four hundred postgraduate students took part in the pilot studies. The returned questionnaires from the respondents were reviewed for incomplete or missing information before being entered into the Predictive Analysis Software (PASW) for statistical analysis.

In order to assess the validity of the instrument, several approaches were used include

face, content, and construct validation. A group of fifteen postgraduate students evaluated the instrument for face validity. Overall, they reported that the instrument was complete and easy to understand. In order to assess the content validity of the instrument, it was presented to a panel of experts for suggestions and validation. Seven experts established content validity of the instrument and confirmed that the statements of the instrument appeared to measure the construct of information seeking anxiety. Construct validity of the instrument was determined using an Exploratory Factor Analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.904) and Bartlett's Test of Sphericity ($\chi^2=6849.087$, $df=1081$, $p=0.000$), indicated the suitability of the data for factor analysis. Subsequently, an Exploratory Factor Analysis using varimax rotation method was performed in order to assess the construct validity of the instrument as well as to determine the appropriate number of factors and statements grouping in each of these factors. Using this method, fifty-three statements with factor loading less than 0.4 were excluded from the instrument, remaining forty items. Results of running an Exploratory Factor Analysis yielded seven factors which collectively explained 50.152% of the total variance of the instrument (See Table 1).

Table 1

Description of Factors

Factor	Eigenvalues	% of Variance	Cumulative %
1	11.479	24.423	24.423
2	3.438	7.315	31.739
3	2.421	5.150	36.889
4	1.965	4.181	41.070
5	1.612	3.430	44.500
6	1.347	2.865	47.365
7	1.310	2.787	50.152

To determine the internal reliability of all sub-scales as well as the overall scale, Cronbach's coefficient alpha was calculated. Reliability analysis using Cronbach's alpha revealed two problematic items which were subsequently eliminated. Dropping these two items from third and seventh factors had the effect of raising alpha coefficient values of these factors. The reliability (alpha) coefficients of the seven sub-scales were 0.832, 0.783, 0.745, 0.784, 0.794, 0.763 and 0.730 respectively. Additionally, resultant alpha coefficient of 0.917 for overall scale provided evidence of adequate internal consistency of the instrument.

The first factor, "barriers associated with libraries", consisted of ten statements which explained 24.423% of the total variance. The rotated factor loadings on this factor ranged from 0.441 to 0.718. This factor represents some aspects of library including policies and procedures, services, furniture, temperature, lighting, library staff as well as library website and OPAC which contribute to students' feeling of anxiety during information seeking

process in libraries. Examples of items retained in this sub-scale are, “the university library has too many confusing policies and procedures for postgraduate students” and “the university library does not offer enough information services for postgraduate students”. The second factor, “barriers associated with information resources”, contained seven statements that were accounted for 7.315% of the variance. The items within this factor had rotated factor loadings between 0.452 and 0.698. This factor represents some aspects of information resources including quality of information resources, relevance of information resources, novelty of information resources, familiarity with information resources and information resources ease of use which contributes to students’ feeling of anxiety during the information seeking process. Examples of items retained in this sub-scale are, “I feel anxious when the quality of the retrieved information resources is unreliable” and “finding poor quality information resources during the information seeking process make me frustrated”.

Only three items were loaded on the third dimension of the Information Seeking Anxiety Scale, “barriers associated with computers, the Internet and electronic resources”. These items ranged from factor loading as low as 0.442 to factor loading as high as 0.752 and collectively explained 5.150% of the total variance in information seeking anxiety. This sub-scale includes statements related to using computers and the Internet for seeking information resources as well as using electronic resources. Examples of items retained in this sub-scale are, “I feel uncomfortable using electronic resources when seeking information” and “I feel anxious when searching the World Wide Web for information related to my research”. The fourth dimension of the Information Seeking Anxiety Scale, “technological barriers”, represented 4.181% of the variance and included six statements. The rotated factor loadings on this factor ranged from 0.421 to 0.745. This sub-scale includes statements related to the influence of system malfunction, mechanical issues, computer errors, computer damages and slow downloading of pages and resources during the information seeking process in information systems. Examples of items retained in this sub-scale are, “rapid changes in hardware and software technologies make me anxious when searching for information resources” and “I feel anxious when different computer technologies are required to retrieve the needed information resources”.

Factor five, “affective barriers”, comprised five statements and accounted only for 3.430% of the variance. The rotated factor loadings for this dimension were between 0.525 to 0.679. Affective barriers dimension represents some statements associated with negative feelings during the information seeking process. Examples of items retained in this sub-scale are, “I feel anxious and frustrated when searching for information resources related to my research” and “I am embarrassed that I do not know how to find information resources for my research”. Three statements were loaded on the sixth factor, “barriers associated with topic identification”, which explained 2.865% of the total variance. The items within this factor had rotated factor loadings between 0.642 and 0.825. The emphasis of this factor is on

determining search terms, selecting general topic and narrowing down the general topic to formulating a focused topic in the process of information seeking. Examples of items are, “selecting a general topic is a difficult part of the information seeking process” and “I feel anxious when selecting a search term for seeking information related to my research”. Finally, the seventh dimension of the Information Seeking Anxiety Construct comprised four items and explained only 2.787% of the total variance. The items within this factor exhibited factor loadings ranging from 0.418 to 0.774. This factor was named as “access barriers”. The seventh factor includes statements associated with accessibility of information resources. Examples of items retained in this sub-scale are, “restricted access to the required full text resources make me anxious during the information seeking process” and “I feel anxious when I know useful information resource, but I do not have access to them”. Results of the study indicated that the newly developed scale, Information Seeking Anxiety Scale (ISAS), had satisfactory face, content, and construct validity as well as internal reliability.

Methodology

Population and Sample

The current study was conducted using survey method. The population of the study comprised eleven thousand (11000) postgraduate students from various faculties at a research intensive university in Kuala Lumpur, Malaysia. Using the “Krejcie-Morgan (1970)” sampling table and to obtain 95% confidence interval (5% error rate), three hundred and seventy-five (n=375) postgraduate students provided the sample for the current study. Applying a stratified random sampling method, a sample was drawn from the targeted population. Of the three hundred and seventy-five participants, one hundred and ninety (50.7%) students were males and one hundred and eighty-five (49.3%) students were females. In terms of level of study, two hundred and sixty-seven (71.2%) participants were master’s level students with the remaining one hundred and eight (28.8%) participant being doctoral level students. Concerning the students’ academic major, one hundred and twenty-two postgraduate students were studied in engineering which comprised the largest group with thirty-three percent (32.5%) of the total participants. The next largest academic major was arts, humanities, social sciences and education (32.3%), followed by pure sciences (30.9%) and small group of medical sciences disciplines (4.3%). Regarding the student’s nationality, non-Malaysian students made up (68.5%) of the participants with the remaining (31.5%) of the respondents being Malaysian. Additionally, one hundred and forty-four (38.4%) students reported having participated in at least one information literacy skills instruction session. Finally, ages of the participants ranged from twenty-two to fifty-two years old, with a mean age of 30.27 years (SD=5.72).

Instrument

The study subjects were required to fill up the Information Seeking Anxiety Scale (ISAS). This instrument contains thirty-eight items, which are measured using a 5-point Likert-type scale anchored by 1=strongly disagree and 5=strongly agree. Scores of the whole scale, which range from thirty-eight to one hundred and ninety, were used as an overall measure of the information seeking anxiety construct, with higher scores on the scale representing greater degree of information seeking anxiety. Additionally, a higher score on any sub-scale of the Information Seeking Anxiety Scale represents higher anxiety as it pertains to that particular sub-dimension. Like many psychological instruments, the Information Seeking Anxiety Scale has both positively and negatively worded statements in order to avoid inserting a bias into the responses. In order to calculate the final score, the scores of positive statements were reversed.

Data Analysis

After the completed surveys were received, they were reviewed for completeness and usability before being entered into the software for analysis. Eight questionnaires were eliminated from the study due to partial completion, replaced with other questionnaires. In order to determine the prevalence of information seeking anxiety, mean anxiety score was computed for the overall scale as well as each of the seven subscales. The researcher also utilized Anwar, Al-Kandari and Al-Qallaf's (2004) proposed levels of library anxiety as a useful way to analyze levels of information seeking anxiety.

Findings

In order to examine the prevalence of information seeking anxiety, mean anxiety score was computed for the total Information Seeking Anxiety Scale (ISAS) as well as each of the seven subscales. By comparing mean scores, information seeking anxiety could be compared across the full scale and its subscales. The overall information seeking anxiety mean score was 88.31, which was virtually the same as the median, at 88.395. The standard deviation was 16.434 with the minimum score being 40 (the lowest possible score for the Information Seeking Anxiety Scale) and the maximum score being 135 (the maximum score possible for the Information Seeking Anxiety Scale is 200) for a range of 95. With regard to the seven sub-dimensions, levels of information seeking anxiety ranges from a low of 7.146 to a high of 23.261. In particular, based on the mean score for various sub-scales of the Information Seeking Anxiety Scale (ISAS), "barriers associated with libraries" ($M=23.261$, $SD=6.293$) was found to be the most important source of information seeking anxiety among postgraduate students. Conversely, results of the study revealed that postgraduate students reported to have experienced the lowest level of information seeking anxiety related to "barriers associated with computers, the Internet and electronic resources" sub-scale ($M=7.146$, $SD=2.682$). Table 2 displays the mean, median, mode, standard deviation,

variance, minimum and maximum for each of the seven dimensions of the ISAS (See Table 2). Additionally, figures 1 to 7 represents the assumption of normal distribution of the seven sub-scales of the Information Seeking Anxiety Scale.

Table 2

Descriptive Statistics for Sub-scales of the ISAS

Composite Variable	Mean	Median	Mode	SD	Variance	Min	Max
Barriers Assoc. with Libraries	23.261	23.2	18.2	6.293	39.603	9.1	42.4
Barriers Assoc. with Information Resources	21.541	22.285	24.57	4.153	17.251	6.14	30.71
Barriers Assoc. with Computers, the Internet & Elec. Resources	7.146	6.5	6.5	2.682	7.196	3.25	16
Technological Barriers	14.816	14.666	10.33	4.07	16.568	5.17	24.67
Affective Barriers	12.345	12.4	10.4	3.458	11.958	4.20	21
Barriers Assoc. with Topic Identification	7.556	8	9.33	2.141	4.584	2.33	11.67
Access Barrier	11.509	12	13	2.617	6.853	4.25	16.25

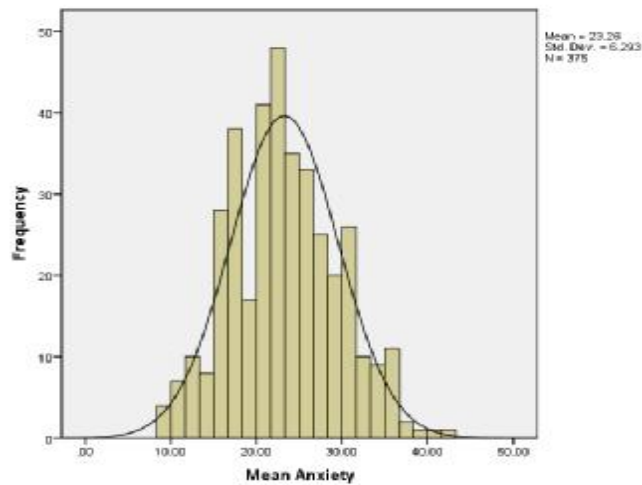


Figure 1. Mean anxiety for the “barriers assoc. with libraries” dimension.

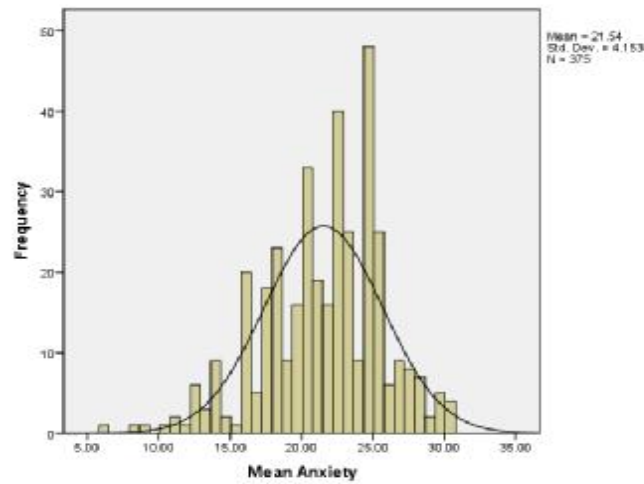


Figure 2. Mean anxiety for the “barriers assoc. with information resources” dimension.

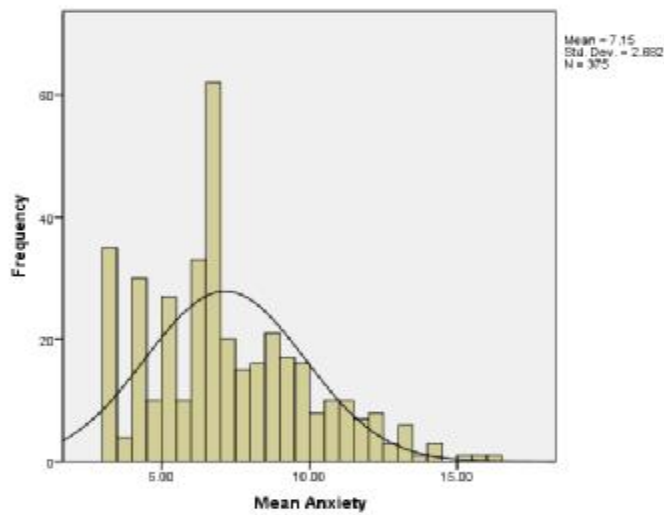


Figure 3. Mean anxiety for the “barriers assoc. with computers, the internet and electronic resources” dimension.

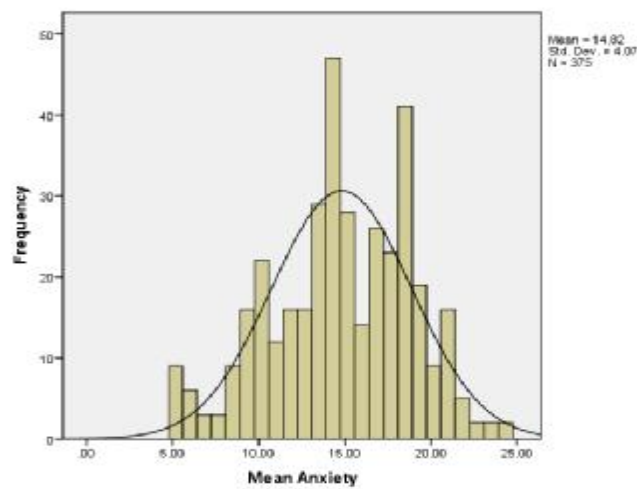


Figure 4. Mean anxiety for the “technological barriers” dimension.

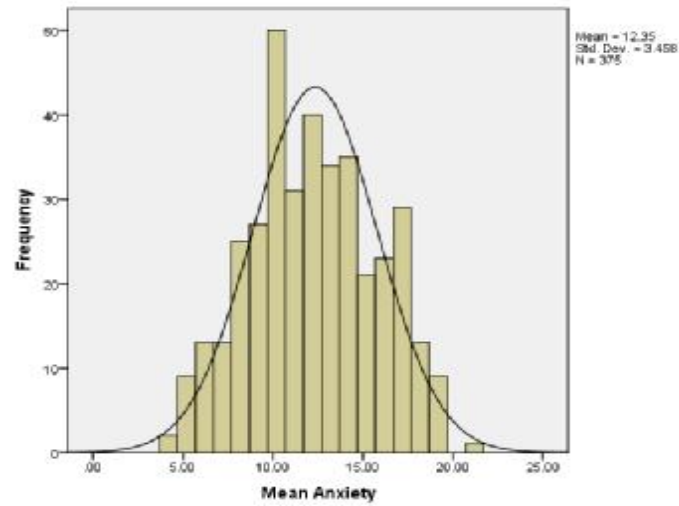


Figure 5. Mean anxiety for the “affective barriers” dimension.

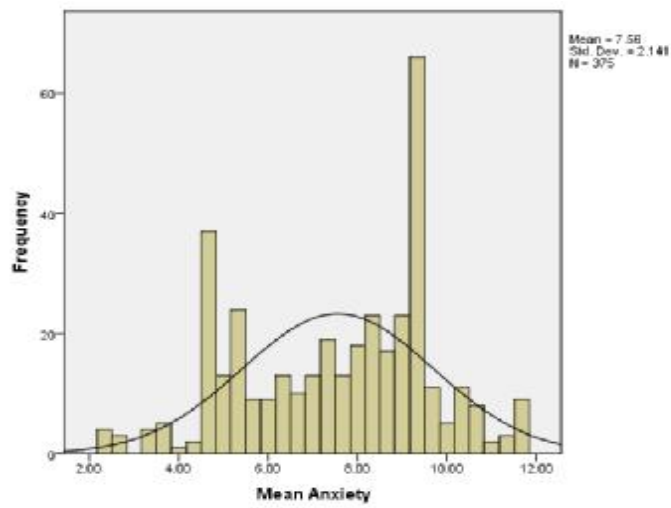


Figure 6. Mean anxiety for the “barriers assoc. with topic identification” dimension.

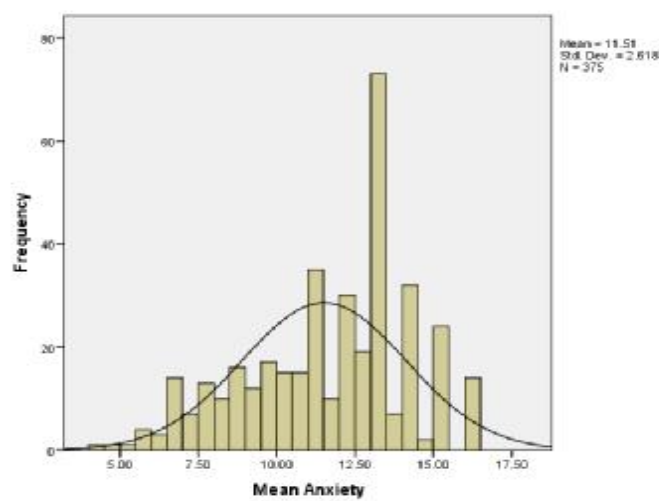


Figure 7. Mean anxiety for the “access barriers” dimension.

The researcher also used Anwar, Al-Kandari and Al-Qallaf's (2004) proposed levels of library anxiety as a useful method to determine levels of information seeking anxiety in various sub-dimensions as well as total scale. They proposed five levels of library anxiety including no anxiety, low anxiety, mild anxiety, moderate anxiety and severe anxiety. Any individual may be characterized as a mild anxious if his composite information seeking anxiety score falls within one standard deviation from the mean, or $M \pm SD$. A person is determine to have low anxiety if his composite score falls outside of one standard deviation to the left of the mean, but within two standard deviations of the left of the mean, or between $M - SD$ and $M - 2SD$. However, if the anxiety falls within $M + SD$ and $M + 2SD$, the individual consider experiencing moderate level of anxiety. There will be no anxiety if the anxiety score is below $M - 2SD$. Moreover, the anxiety level will be severe if the score is above $M + 2SD$. Levels of information seeking anxiety determined using this method for each of the seven dimensions as well as the total scale. The results revealed that about 70% of the sample reported to have experienced mild level of information seeking anxiety, while moderate and severe levels of information seeking anxiety were reported only by fifty-eight (15.5%) postgraduate students. Additionally, different levels (low, mild, moderate and severe levels) of the information seeking anxiety construct were reported by 96.5% of the postgraduate students at the sampled university (See Table 3).

Table 3

Levels of Information Seeking Anxiety for Overall Scale and Sub-scales

Dimension	No anxiety	Low anxiety	Mild anxiety	Moderate anxiety	Severe anxiety
Barriers Assoc. with Libraries	7(1.9%)	50(13.3%)	257(68.5%)	54(14.4%)	7(1.9%)
Barriers Assoc. with Information Resources	13(3.5%)	44(11.8%)	274(73.3%)	40(10.7%)	3(0.8%)
Barriers Assoc. with Computers, the Internet & Elec. Resources	-	69(18.4%)	247(65.9%)	45(12.0%)	14(3.7%)
Technological Barriers	15(4.0%)	53(14.1%)	252(67.2%)	51(13.6%)	4(1.1%)
Affective Barriers	11(2.9%)	51(13.6%)	238(63.5%)	73(19.5%)	2(0.5%)
Barriers Assoc. with Topic Identification	7(1.9%)	86(22.9%)	244(65.1%)	38(10.1%)	-
Access Barrier	10(2.7%)	60(16.0%)	258(68.8%)	47(12.5%)	-
Total Scale	13(3.5%)	44(11.8%)	259(69.3%)	52(13.9%)	6(1.6%)

Discussion and Conclusion

Information seeking anxiety can be interpreted as the fear and/or apprehension of searching for information resources during information seeking process. Frustration over how

to begin a search for a topic, what to do in order to find information related to the research topic, and how to complete the information search process has been documented by many researchers as a prominent and prevalent phenomenon in students. Despite the existence of anxiety during the information seeking process among students, prior to the present study, no valid and reliable instrument to measure levels of anxiety has been developed and validated. Additionally, this phenomenon has yet to be empirically investigated among postgraduate students in a Malaysian research-intensive university. Results of the study indicated that the newly developed scale, Information Seeking Anxiety Scale (ISAS), has satisfactory face, content, and construct validity as well as internal reliability. This scale has the potential to be a useful tool for determining what aspects of the information seeking process in libraries or information systems are perceived to be barriers by postgraduate students. Furthermore, the study found that information seeking anxiety is a multidimensional construct. This finding is consistent with Bostick (1992), Noor and Ansari (2011), Shoham and Mizrachi (2001), Van Kampen (2004) and findings that library anxiety to be a multidimensional construct.

The results of the study revealed that while information seeking anxiety is present among the studied students, the overall level was not high. Based on the mean score for various subscales of the Information Seeking Anxiety Scale (ISAS), the “barriers associated with libraries” dimension was found to be the most important source of information seeking anxiety among postgraduate students. Based on the items that comprise this component, postgraduate students appeared to have less comfort with using university libraries in order to search for information resources. Conversely, postgraduate students had the least levels of information seeking anxiety as it pertained to “barriers associated with computers, the Internet and electronic resources” dimension. This finding indicated that postgraduate students experienced low levels of information seeking anxiety in regard to using computers, the Internet, online and electronic resources during the information seeking process. Additionally, results of the study showed that the information seeking anxiety is a real phenomenon among postgraduate students which is present in 96.5% of the postgraduate students at a research-intensive university in Kuala Lumpur, Malaysia. It should be noted that information needs, seeking and use are situational, and the information seeking anxiety is a contextual phenomenon. Context is the site (research-intensive university) where the phenomenon (information seeking anxiety) is constituted as the research object. The prevalence and levels of information seeking anxiety will probably be different if the research object is gauged in another research setting.

The relatively high prevalence of information seeking anxiety among postgraduate students strongly suggests the need for increased awareness of this phenomenon. By being aware of the prevalence of anxiety and characteristics of students who are at-risk, librarians and administrators will be in a better position to provide services and instructions which is the most effective to reduce levels of anxiety and, thus, prepare students to be more successful in

their research. Additionally, many researchers assert that if anxious students are made aware that others are feeling the same way, their own anxiety may be reduced (Carlile, 2007). It is therefore suggested that librarians inform students that the negative feelings experienced by most students in several stages of the information seeking process are normal. Bringing the concept of information seeking anxiety into information literacy skills instruction programs is a useful way to increase students' awareness about this phenomenon. Additionally, sharing other students' fears and difficulties during the information seeking process via video, brochure, discussion or humorous tales can serve to lessen students' fear.

Providing information literacy skills programs was reported to be an effective method to ease students' difficulties in library environment (Onwuehbuze et al., 2004). Academic librarians and administrators should conduct experimental studies using pre- and post-test method utilizing the Information Seeking Anxiety Scale (ISAS) to measure the effectiveness of information literacy skills instruction programs on reducing information seeking anxiety. They might also consider studies that assess the differences in reduction of information seeking anxiety due to different types of information literacy skills programs like formal class setting, small group sessions, one-on-one encounters, written guides and brochures, audiovisual presentations and computer-assisted instruction. More decreases in information seeking anxiety could then be associated with success of the treatment. Additionally, the role of academic reference services and reference librarians in reducing students' negative feelings during the process of information seeking is crucial. Reference librarians are playing a major role in interpreting students' inquiries, identifying appropriate sources, teaching and assisting students to find information related to their research and deciding whether or not the retrieved information is useful or adequate, which all can help students overcome their anxiety. Furthermore, to facilitate postgraduate students' library research, providing individualized reference services by librarian liaisons who are expert in that area of research can help students handling the intricacies and challenges of the information seeking process.

Results of the study showed that "barriers associated with libraries" dimension was the most problematic source of information seeking anxiety among postgraduate students. By providing students with positive information seeking experience in university library - and this includes friendly, approachable and accessible staff and non-threatening environment - students may feel more confident and comfortable with using the library for conducting research. Some previous researchers recommended that if librarians are seen as visible, approachable, and unthreatening and conduct reference interviews in a professional manner that is sensitive to students' fears and concerns, students may begin to feel more comfortable in seeking help when they feel lost or anxious (Carlile, 2007). Additionally, the literature shows that the manner in which library décor and furniture are placed can either help reduce or increase users' anxiety levels. The library space and layout, building, location of stacks and equipments, lighting and temperature also make a difference in users' behavior and emotions.

As a result, it is very important for librarians to make efforts to create a pleasant environment for students to conduct their research.

“Barriers associated with information resources” was also found to produce low, mild or moderate levels of information seeking anxiety in 95.7% of postgraduate students studied. Librarians should make their best effort in selection, acquisition, organizations and promotion of collection to increase availability, accessibility, novelty, quality and ease of use of information resources for postgraduate students. Additionally, providing maximum access to full text resources may help reduce information seeking anxiety of students. Because some levels of information seeking anxiety were reported due to “barriers associated with computers, the Internet and electronic resources” as well as “technological barriers”, librarians should monitor library equipments used by students for information seeking, checking periodically that all machinery are functioning properly and assisting students to solve mechanical problems. Finally we should mention that, along with the efforts made by librarians in acquisition, organization and dissemination of information in academic libraries, investigating psychological barriers which hinder students from use of information resources as well as finding methods to overcome these barriers could also be beneficial.

This study was the first attempt to investigate information seeking anxiety among a group of postgraduate students using the Information Seeking Anxiety Scale (ISAS). Further validation studies in different educational setting must be conducted in order to determine the extent of construct validity of the Information Seeking Anxiety Scale (ISAS). Additionally, the possible correlation between information seeking anxiety construct and other academic-related anxiety like library anxiety, information anxiety, Internet anxiety and computer anxiety should be investigated. Moreover, Information Seeking Anxiety Scale (ISAS) might be tested in other research-intensive universities in Malaysia to determine if postgraduate students share the same type of anxiety related to searching for information resources. Replicating this study with a sample of undergraduate students and comparing information seeking anxiety experienced by postgraduate and undergraduate students should be conducted by researchers. Finally, In order to determine which types of treatment are affective in reducing information seeking anxiety phenomenon, researchers should conduct experimental studies using pre- and post-test method utilizing the Information Seeking Anxiety Scale (ISAS).

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